DWQ Monitoring's Water Quality Data

INTRODUCTION TO THE DATABASE

DIVISION TRAINING SESSION #1
MAY 30, 2012

Data: From River to Database

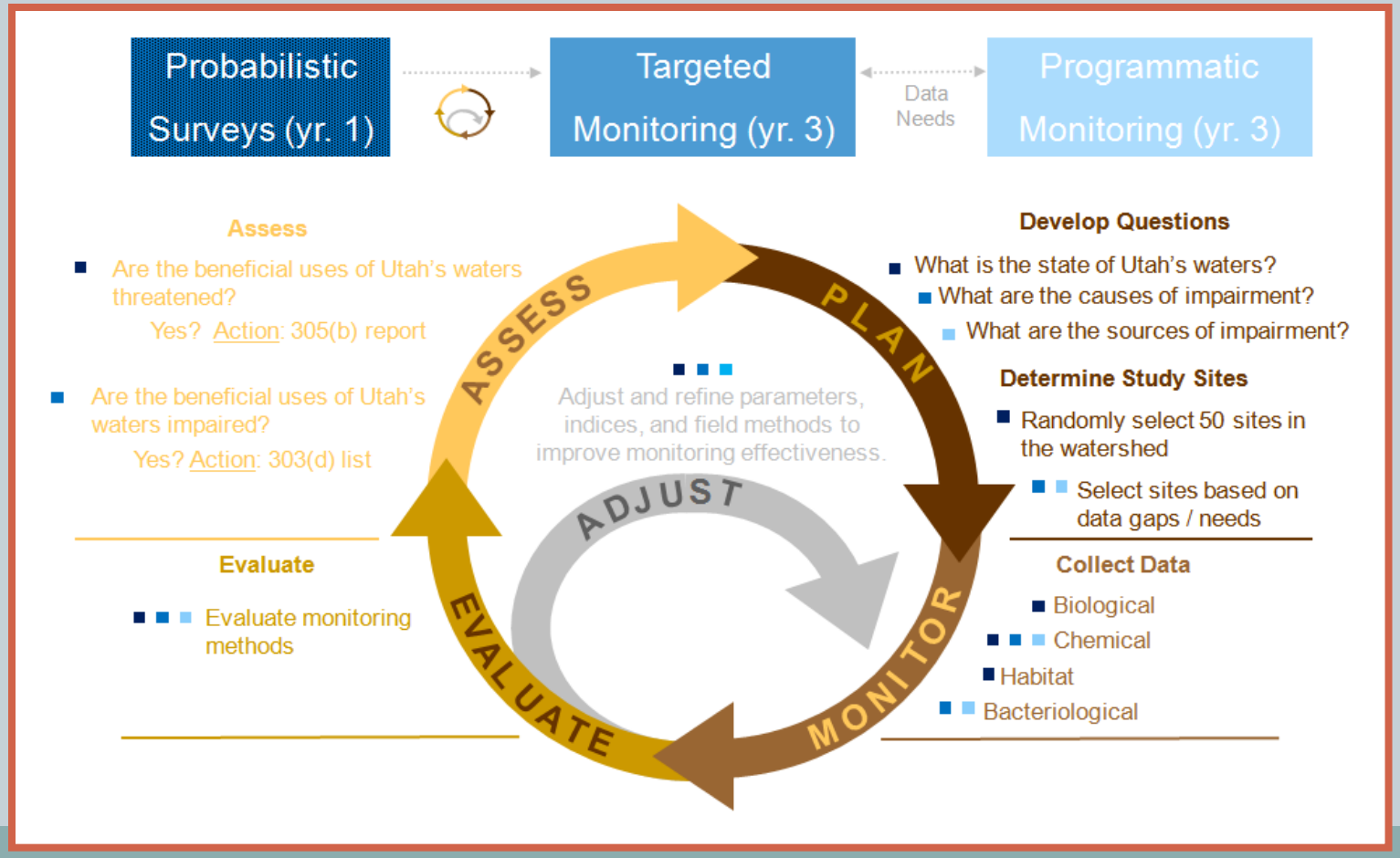
- DATA COLLECTION
- DATA MANAGEMENT
- DATABASE INTRODUCTION
- GOALS AND NEXT STEPS

Monitoring for Data

- Strategic Monitoring Plan
- Definitions of Data "Types"
- Definitions of Data "Sets"

Monitoring's Strategic Monitoring Plan

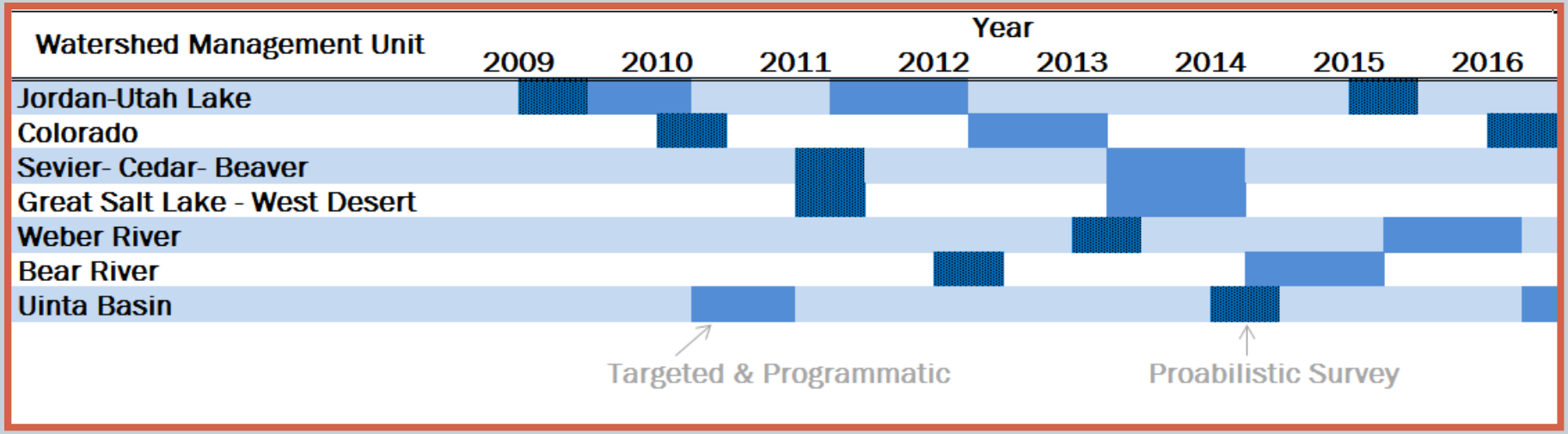
A Tiered and Adaptive Framework



Monitoring's Strategic Monitoring Plan

A Rotating Basin Approach

- Water year – October 1 through September 30
- Jordan River-Utah Lake Basins sampled 2009, 2010, 2011, 2012



Monitoring's Data "Types"

Currently able to Import to New Database

- Lab data – data obtained from laboratory analysis
  - State Lab
  - AWAL
- Field Data – data obtained in the field with multi-sonde
  - Hydrolab
  - In Situ
  - YSI
- Flow data – measured in the field
  - Measured by field staff
  - Measured by gage**
- E. coli data – E. coli samples processed/analyzed by field staff
  - Quanti-Tray (18 and 24 hour)

Monitoring's Data "Types"

Currently not Imported to New Database

- Macroinvertebrate – summary data about richness/diversity
  - USU Bug Lab
  - Larry Gray
- Diatom, Phytoplankton, Zooplankton, Sediment
  - Rushforth Phycology
  - Larry Gray
  - USU Soils Lab
  - University of Utah Labs
- Fish data – counts, diversity data collected in the field
- Fish data – mercury data derived from tissue
- Logger data – interval data
  - Temperature loggers
  - Pressure transducers
- Observational data – data derived from field observations
  - UCASE field forms
  - Wetland Vegetation and Bird surveys
  - Photos

Monitoring's Data "Sets"

Commonly Used Terms

- Lake data – all types of data collected on a lake activity
  - Lab samples collected at surface, possible mid and bottom depths
  - Field data collected at depth of lab samples
  - Field data collected at depth intervals from surface to bottom
  - Observational data collected from secchi reading
  - Phyoplankton data collected below surface
- Cooperator data – all types of data collected by a cooperator
  - Lab samples collected at site
  - Field data collected with lab sample
  - Flow data collected at site or from gaging station
- Volunteer USU data – data from USU Extension volunteers
  - Observational data collected from secchi reading
  - E. coli data collected, and/or processed and analyzed by volunteer
- Special Studies data – data for special studies
  - Willard Spur
  - Nutrient Project

Monitoring's Data "Sets"

Other Commonly Used Terms

- QC Data – all types of data collected with a quality control activity
  - Trip Blanks (Lab samples, E. coli)
  - Field Blanks (Lab samples, E. coli)
  - Equipment Blanks (Lab samples)
  - Duplicates (Lab samples, Field data, E. coli)
  - Replicates (Lab samples, Field data, E. coli)
- Organic data – organic parameter data Lab
  - Lab data reported with different template

Monitoring's Data Management

- Data Management History
- New Data Management
- Database Use

Monitoring's Data Management History

- Local Version of STORET
  - Software-dependent
  - "Data request"-driven sharing
  - No longer supported by EPA
    - Replaced with Water Quality Exchange - "WQX"

Monitoring's NEW Data Management

- AWQMS/WQX
  - Utah installed "out-of-the-box" AWQMS database
    - Gold Systems funded with Exchange Network grant
    - Web-based application
    - Migrated all "historic" data
    - Parallel to EPA's WQX database
  - Currently in-development to add enhancements
    - Data validation tools
    - Data query tools
    - ...and more
  - AWQMS User's Community
    - "Community Software" approach

WQX
WATER QUALITY EXCHANGE

Monitoring's NEW Data Management

- AWQMS/WQX
  - Test versus Production
  - External Access
    - Access outside of DEQ Firewall
    - Cooperator Access
    - Public Access
  - Database Support
    - Monitoring Section's new hire
    - Trisha Johnson
    - DTS – Rob Sandberg
    - Gold Systems

WQX
WATER QUALITY EXCHANGE

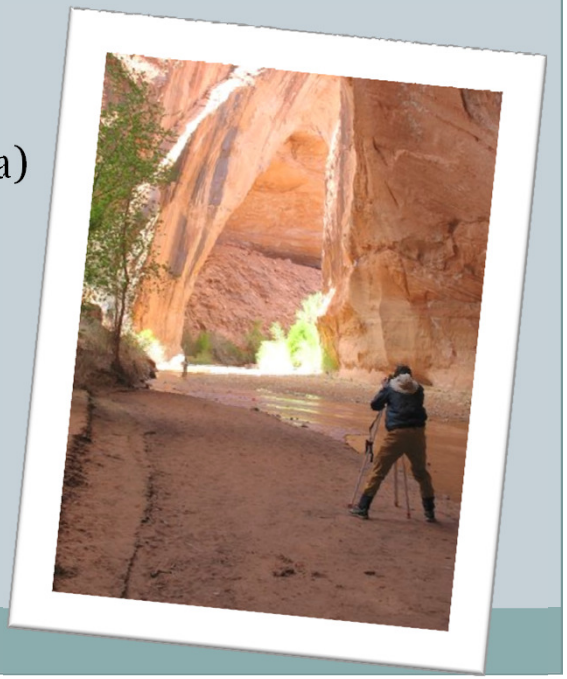
Monitoring's Database Use

- Manage and store data centrally
- QC data and track changes
- Submit data to EPA
- Internal access to data for reporting and assessment
- External access to Cooperators for data submission and data access

Monitoring's Database Datasets

Currently Imported to New Database

- "Historic" Data –data previously stored in BlueFish/STORET
  - 1974 through ~March 2009
- 2009 Data – data collected in 2009
  - Lab data from March – Dec. 2009 (except Lake, Organic, some QC Data)
  - Field data from March – Dec. 2009 (except Lake, Organic, some QC Data)
  - Flow data from March – Dec. 2009
- 2010 Data – data collected in 2010
  - Lab data from 2010 (except Lake, Organic, some QC Data)



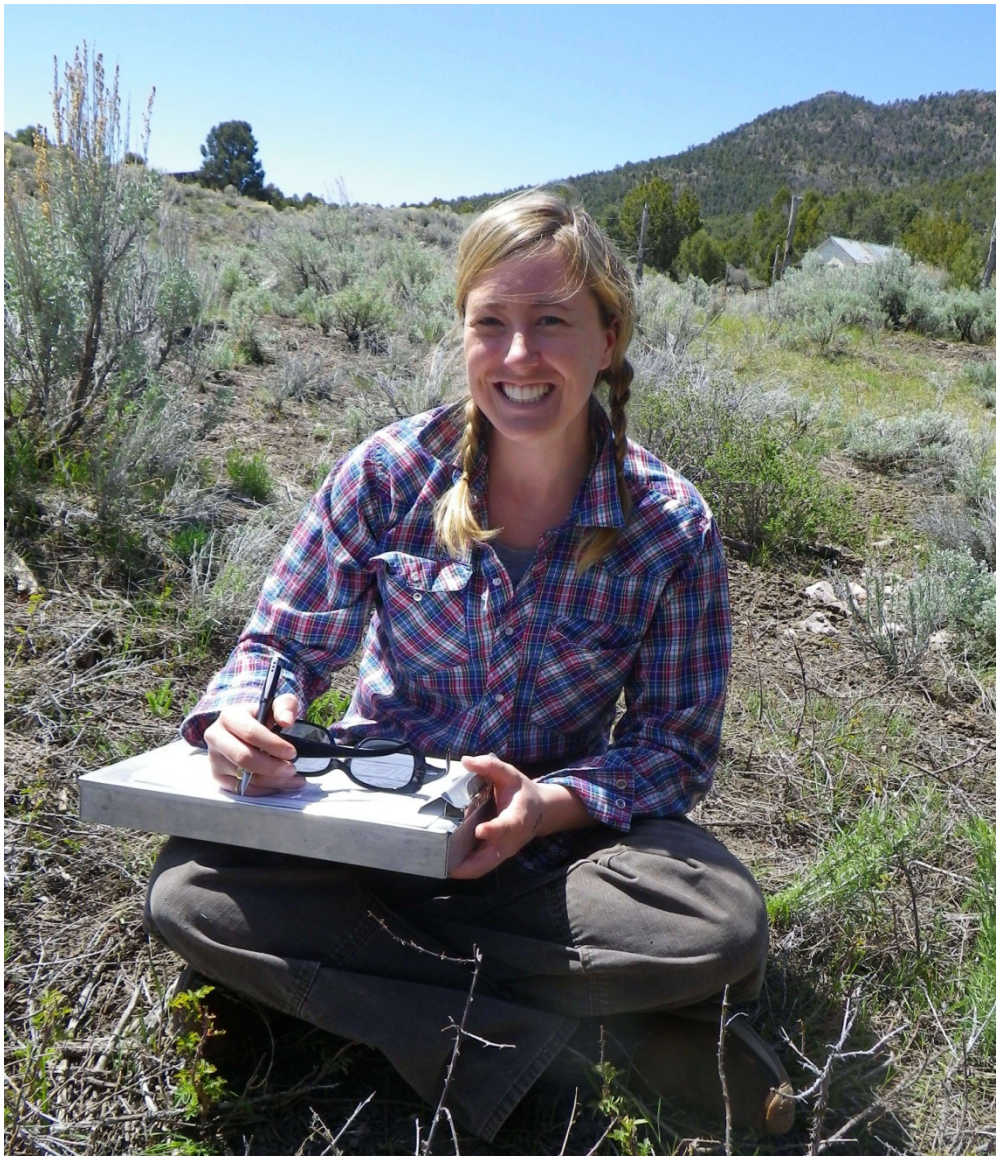
Monitoring's Database Datasets

To be Imported to New Database

- 2009 Data
  - Lake data (Lab and Field)
  - E. coli data
  - Organic and QC data (Lab)
- 2010 Data
  - Field data
  - Lake data (Lab and Field)
  - Organic and QC data (Lab)
  - E. coli data
- 2011 Data
  - All Lab data
  - All Field data
  - E. coli data

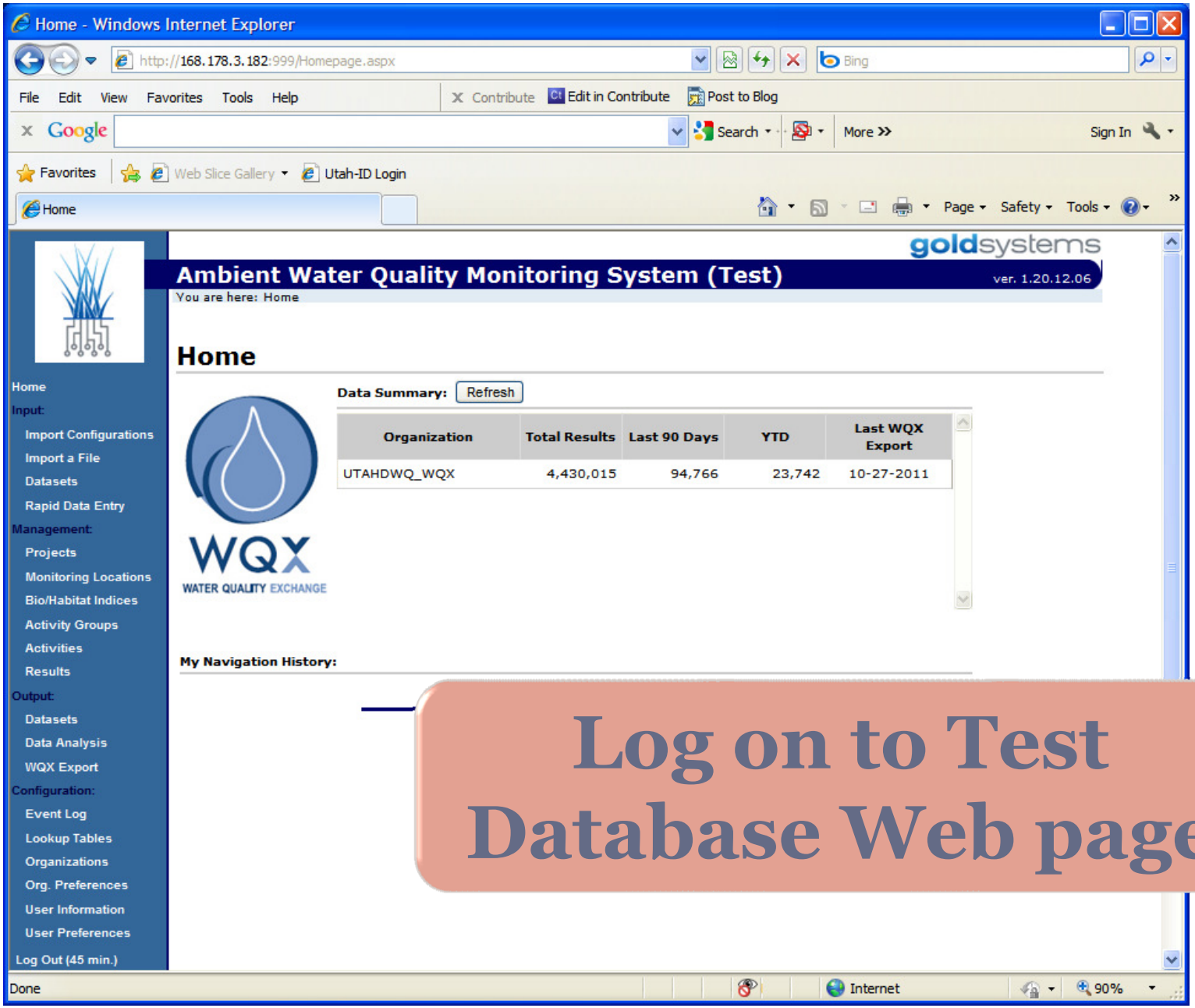
Monitoring's Database

An introduction to the new DWQ Database



Monitoring's Database Key Points

- Organization – "UTAHDWQ_WQX"
- Activity Group and Activity v. Trip
- Look up Tables
- Query v. Detail Pages
- Local management v. EPA
- Wild card - %



Log on to Test Database Web page

Monitoring's Database

1. Creating and finding monitoring locations

Monitoring's Database

1. Creating and finding monitoring locations
2. Using the database tools to find and analyze data online

Monitoring's Database

1. Creating and finding monitoring locations
2. Using the database tools to find and analyze data online
3. Exporting water quality data for further analysis

Monitoring's Next Steps

- Data Collection
- Data Management
- Data Validation

Monitoring's Goals

Data Collection

- Volunteer monitoring
- Field audits
- Long-term monitoring instrumentation
- SAPs

Data Management

- Public access to database
- Credible data criteria

Monitoring's Data Validation

- Streamlined data processing
- Automated validation
- Data Status: Preliminary v. Final
- Internal threshold analyses
- Variety of access rights
- Flexible design

Monitoring and Database Contacts

JAMES HARRIS
MONITORING PLAN
DATABASE DEVELOPMENT
LABORATORY USE

KATE TIPPLE (UNTIL JULY 21)
DATABASE USE
DATABASE DEVELOPMENT
DATA MANAGEMENT

TRISHA JOHNSON
DATA QUALITY
DOCUMENTATION
STATE LAB LIAISON

MARK STANGER
MONITORING LOCATION CREATION

Thank you!